

## On the Absence of Cuttlefish in the Western Atlantic

BY

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THE QUESTION CONTINUALLY creeps into the cephalopod literature as to whether representatives of the Old World cuttlefish family Sepiidae occur in the Western Atlantic Ocean. Despite repeated statements by cephalopod specialists that they are absent in the New World, various authors continue to assert or intimate that they do indeed inhabit American waters. The latest attempt to "prove" the existence of *Sepia* in the Americas (HARRY & SNIDER, 1969) is so specious, but apparently documented, that an answer is required to lay this new appearance.

It should first be noted that representatives of the genus *Sepia* are very common and numerous in the waters of the Old World. They occur from Scandinavia (but not Iceland or Greenland) throughout European seas (except the Baltic and the Black Seas), along the West African coast to the Cape of Good Hope and throughout the Indian Ocean to Australia and the East Indies. In the Pacific they occur from Japan southward to Australia. They do not extend to New Zealand nor eastward into Oceania. Thus no sepiids occur over most of the Pacific Ocean. They are absent from both coasts of the Americas. Ecologically they occur from along the continental slope inshore over the continental shelf to the shallow waters of bays, harbors and open beaches.

Contrary to the impression given by HARRY & SNIDER (1969: 91), most sepiids are not secretive and are easily caught by the use of lures, spears, baits, traps and commercial trawling gear. The latter means is particularly effective and trawlers annually produce thousands of tons of *Sepia* in such diverse waters as the Saharan Bank between the Canaries and the African coast (~20 000 metric tons) (VOSS, 1973) or the continental shelf around Hong Kong (1 000 metric tons) (VOSS & WILLIAMSON, 1972). Several tons are sometimes taken in a single trawl haul. In West African waters the writer, working aboard the R/V *John Elliott Pillsbury* of the University of Miami and using standard 41-ft. (12.3 m) Gulf of Mexico shrimp

trawls, took numerous specimens of all 5 species of West African Sepiidae (VOSS, in press). Several thousand tows with similar gear on similar bottom from French Guiana to Yucatan, the Antilles to Miami have taken not one specimen!

In contrast to the shells of most other mollusks, the shell (cuttlebone or sepiion) of sepiids is minutely chambered and very light. While clam shells on the bottom are fairly good indicators of the former presence in the vicinity of a living clam, the shells of sepiids on a beach, unless in large quantities, cannot be taken as evidence of the former presence of a living animal. Indeed, the animal from whence the sepiion originated may have lived in waters thousands of miles distant. Ships working in the area off the Gulf of Guinea regularly encounter windrows of cuttlebones floating on the surface, often many hundreds of miles at sea. The shells are clean, usually uninjured, and in large numbers. They are easily identifiable. These cuttlebones lie directly within the origins of both the North and South Atlantic Equatorial Currents which flow to the westward, later to bathe the beaches of the Caribbean and North and South America. It is natural that these currents should and do transport cuttlebones to American waters.

The writer has specialized in the study of the cephalopods for about 20 years. During this period several dozen cuttlebones have been sent in for identification, taken from various localities in the Americas, and each one, when the condition of the shell permitted specific identification, has been found to have come from a known European or African species. No specimens, still retaining characters of specific value, have been unidentifiable, unusual, or aberrant. During the month of March, 1972, 2 cuttlebones were obtained, one from Boynton Beach, Florida, by Mr. Thomas McGinty and one from Chub Cay, Bahamas, by Dr. Donald de Sylva. Both were sent to the writer for identification and proved to be shells of *Sepia officinalis hierredda* Rang, 1837, a common West African species.

The major reason why members of this family have not been able to become established in the Americas is because of the wide extent of deep ocean that they would have to

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cross. *Sepia* are coastal animals living on or near the bottom. While various authors have referred to their seasonal occurrence in deep water, the reference to deep water is used in a comparative sense and refers to the outer continental shelf and continental slope, not to the deep ocean. As a result, adult *Sepia* have been cut off from the Americas by an oceanic deep water barrier.

Similarly, in their early stages the young of the Sepiidae are not planktonic. Sepiid eggs are large, furnished with large supplies of yolk, and the young hatch out and immediately take up a benthic existence. Thus unlike some invertebrates and fishes, the young are not transported long distances as members of the temporary plankton. In other words, both as newly hatched young and as adults, the tropical Atlantic and Eastern Pacific have served as an effectual barrier to the transoceanic migration of the sepiids.

How then has the idea persisted that sepiids have lived or do live in American waters? One reason is the widespread occurrence of cuttlebones on American beaches. Unfortunately (or perhaps fortunately), few of the records have been published as the bones are collected purely as curiosities. As a result, reports are spotty. Harry & Snider seemed to think that some special interest must be attached to the fact that there are no records of cuttlebones from the island of Puerto Rico. Looking at this from a different point of view, we can see that lack of records from particular areas are more artifacts of collecting effort and efficiency than proof that sepiids do not exist in those particular waters. Numerous species of cephalopods are now known to be generally distributed throughout the Gulf of Mexico and Caribbean Sea, yet they have only been reported in the literature from a few widely separated places.

The other so-called evidence for the existence of *Sepia* in the Western Atlantic is based upon a few early popular reports of *Sepia* in tropical Atlantic waters and two apparent records in the scientific literature. Both of these latter are referred to by Harry & Snider: D'ORBIGNY (1841) and OLIVEIRA (1940).

I cannot vouch for the identity of d'Orbigny's specimen. It was originally labeled *Sepia orbignyana* and according to his account (1841) was from the island of Martinique. As it did not agree with the true *S. orbignyana* which comes from Europe and Africa, he named it *Sepia antillarum*. However, the cuttlebone was missing and the remaining fleshy parts of the animal were in such poor condition that **no specific characters are given**. In his great monograph of the cephalopods he (D'ORBIGNY, 1848: 290) placed *S. antillarum* among the Uncertain Species with the statement that he only had a single specimen and that it was in such poor condition that it was unable to

be characterized. I have searched the collections of the Paris Museum for all specimens originating in the Americas; this specimen has not come to light. ADAM & REES (1966) in their great monographic treatment of the family Sepiidae retain the name as a valid one in their list of species and varieties of Sepiidae but with the comment that it is a "doubtful species" (p. 149). This opinion of the record is clearly given in an earlier statement (p. 145) "As to geographical distribution, it is first of all noteworthy that no Sepiidae have ever been found on the coasts of the American continent or on those of New Zealand, except as stranded cuttlebones."

It is my opinion that either d'Orbigny misidentified the poor remains being misled by the previous identification and supposing that there had originally been a cuttlebone since removed, or that the location was in error, a not infrequent occurrence in early museum labels. Remember that *Cassis madagascariensis* was so named because the label said Madagascar whereas the living specimens occur in Florida and the Caribbean!

The other so-called positive proof of living *Sepia* in the Americas is the description of *Sepia officinalis jurujubai* by OLIVEIRA (1940). This was an unfortunate paper since the description was based clearly upon a specimen of the loliginid squid *Sepioteuthis sepioidea* Blainville, 1823, a common reef squid of the tropical Atlantic; it seldom occurs as far south as this specimen did. There is no doubt about the mistake; the cuttlebone was not illustrated, as pointed out by Harry & Snider, for the very good reason that there was none. Dr. W. Adam (personal communication) has drawn my attention to the fact that ADAM & REES (*op. cit.*: 151) synonymized *jurujubai* under *Sepioteuthis sepioidea*. It is very possible that d'Orbigny's *Sepia antillarum* was a poorly preserved specimen of the same species. The specimens referred to by BROWN (1756) also were most probably *Sepioteuthis*. The generic name *Sepia* was widely and indiscriminately used in the popular literature for various genera of squid even as late as the middle 1800s.

*Sepioteuthis sepioidea* is a true loliginid that strongly resembles *Sepia*; the body is oval, the fins are marginal the length of the mantle, the head is large with prominent eyes and the arms and tentacles are stout. It also has the habit of hovering over coral and grass and changing colors rapidly as do *Sepia*. The name itself means the "Cuttlefish squid that looks like a cuttlefish." The only major thing missing is a cuttlebone (!); it has a typical loliginid gladius of chitin. It is this animal that has for years been referred to as *Sepia* in popular and semipopular natural history accounts. With occurrence of cuttlebones washed up on the beach the existence of cuttlefish in American waters seemed confirmed.



In summation I can say that despite thousands of otter trawl hauls by such vessels as the R/V *Oregon*, *Pillsbury*, *Eastward*, *Alaminos*, and others, the studies carried out in shrimp investigations from Brazil to Miami, and literally thousands of observations by swimmers, snorkel and SCU BA divers from the surface to in excess of 60m and investigations by research submersibles, not a single living or dead whole *Sepia* has ever been seen in the Western Atlantic.

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